QRV?

The Newsletter of the Seattle Auxiliary Communication Service

"SEA-Shake `97"

ACS - Emergency Communications Exercise (June 7, 1997)

By Mark Sheppard, N7LYE ACS Manager

Overview:

May was quickly drawing to a close and we hadn't had an exercise since the previous September. I realized that if we were going to get a communications drill planned and executed for the Seattle ACS Team, it would have to happen right now. The three months of Summer bracketed by the two three day weekends are crammed full of vacations for folks and past experience has taught us there is no such thing as a good weekend for an event during that period of time. So the word went out by postal service, e-mail and radio and a planning meeting was held on Wednesday May 21 at the Seattle EOC. Approximately, 15 people attended along with LuAn Johnson of the Division of Emergency Management, program manager for the Seattle Disaster Aid and Response Teams (SDART).

The planning group outlined the basic elements of the disaster communications drill. It was agreed that the scenario would be based on a major earthquake and that we would progressively degrade our ham communication systems over the course of the event forcing us to rely on simplex and area networks. Additionally, it was agreed that in order to bring a higher degree of realism to the drill, individual scenarios should be written for each of the SDART neighborhood areas and provide a richness of plausible events occurring at actual locations and addresses. I asked for volunteers to help write and organize the details of the exercise and was very fortunate to team up with Scott Cummins

KC7LGE, Bruce Miller KC7IAY, Pete Smith N7BYP and Martin Berg. The team met in part on Memorial Day and agreed on the details and split up the work load. The Drill was planned for Saturday June 7th and all materials to make up the briefing package had to be written, copied and mailed to arrive no later that Friday June 6. With the friendly help and support of Denise Croysdill of the Seattle EOC we made it with absolutely no time to spare.

Purpose:

The purpose of this exercise was to demonstrate and improve the team's capability to provide emergency communications services in times of need. The drill was based on a disaster scenario which described a 8.2 magnitude earthquake occurring in the Seattle area causing significant damage to public and private structures and cutting off all land-line and cell telephone services and significantly burdening the 800 MHz. Radio system with high volumes of traffic.

Photo by Bruce Miller

Ralph Javins, N7KGA, and Ray Stommel, N7QAK, located at Seattle Police North Precinct handle East Sector net control during the simplex phase of the excercise.

From the Editor

QRV?

Your editor puzzled over what to call our ACS newsletter as we set about renewing its publication. "Hmmm....," I thought, "how about *The ACS Communicator?* - or- *The ACS Repeater?* No, perhaps something simpler and straighforward like *The ACS Newlsetter*." Somehow none of these seemed quite right. Just as I was about to give up, *QST* arrived in the mail. If *QST* (and *QEX*) works for the ARRL perhaps there's another "Q" signal that would be appropriate for ACS. I went to my trusty old *ARRL Operating Manual* and found the answer. There it was: QRV. QRV sent as a statement means "I am ready." Sent as a question, QRV? means "Are you ready?" Since our organization is about readiness, QRV? seemed to be right on target for a newsletter name. QRV? Are you (we) ready? Then, when I found Voltage in my font collection, that clinched it! Our newsletter would be known as *QRV?*.

The current plan is to publish *QRV?* four times each year in winter, spring, summer, and autumn editions. You will also be able to access *QRV?* on the web at the ACS website (see URL at left). You may want to check out the web edition to see the "colorized" version of *QRV?*, especially the photos!

I would like to take this opportunity to thank all those who helped get *QRV?* up and running. If any of you have suggestions, or if you have items you'd like to see included, please give me a call or send a note (please see phone number/e-mail address at left). I'm especially looking for original material so if any of you have ideas to share, they will be most welcome!

We're looking forward to publishing *QRV?* and hope you find it useful. -ed.

▬▬▬▬▬

Oh yes, one more thing. If you're wondering about the CW prosign above, it's *di-dah-di-dah-dit*: end of message. We'll put it at the end of each article.

From the EOC

By Jim Mullen, Director
Seattle Emergency Management

The growth and development of the ACS organization is an amazing success story. In just two years ACS has become a viable team of communication professionals who have organized and trained themselves to be a resource to the City of Seattle during disasters or emergencies. This commitment to excellence was demonstrated once again during the very successful communications exercise that ACS conducted on June 7. I personally observed the action in the EOC, and was privileged to sit in on the critique which followed immediately.

The drill was a very challenging one, and participants were asked to think quickly, rely on their protocols, and trust their team members. The severity of the scenario chosen was testament to the faith your leaders have in you. I want to particularly thank everyone who participated in the critiques: we need to be resolute in our desire to improve, and constructive self-criticism is a very good way to get better - the real thing may not be far off.

We in the Seattle EOC provide sponsorship to ACS and have incorporated ACS and its members into our core organization structure and our response and readiness plan. We have come to rely on ACS to provide the critical communication links to our neighborhood-based SDART teams as well as providing backup communications between public agencies and field command centers. We are proud that you have volunteered to be part of the City's response team, and I personally hope that you know that we depend on you to continue to help ACS grow and evolve. There is much more to do, and my confidence in our ability as a City to sustain our population during a major emergency is due in large part to the efforts of ACS. On behalf of the City and Seattle Emergency Management I want to extend my sincere thanks for all your good work and professional preparation. I look forward to continuing to work with you. ▬▬▬▬▬

ACS Drill
Net Control

By Wade Blake, N7LGK

As one of the net control operators at Seattle's EOC for the 07 June 1997 drill, I'd like to share some of my general observations and impressions.

Being the center point for communications during a drill or a real incident, information at the EOC must be put in perspective. Of all the information coming in, there are only so many resources to handle the situation. And like a triage in a medical situation, the net control station and leadership at the EOC needs to handle the most critical situations first. So, what's urgent for you, may not be at the top of the list when all the other situations are compiled at the EOC. But it's important that you promptly report the exact situation in the most concise way so that the correct resources (fire, medic units, police, gas, electric, engineering) can respond to your situation.

During the drill period, people did very well communicating the necessary information in real time and created a very good demonstration of ACS capabilities in the Seattle community. Field ham radio operators were very professional and the tactical style of communications was very effective for this scenario. Formal traffic was not necessary for this drill. Perhaps it can be accommodated for another drill for practice.

When field sites at the Community Centers could not reach the EOC directly on simplex due to terrain or intermod problems, other field units were able to relay the information. It was important for each of the field units to be able to communicate with neighboring units. Using another simplex frequency for this purpose allows the primary net control frequency to be used for ongoing traffic.

At the EOC, with two net control operators and a packet operator all within 10 feet did create a problem with the noise level. Headphones did help with this, but

Best of the Rest

Another regular item we intend to include in *QRV?* is "Best of the Rest." Best of the Rest will highlight information from other sources on emergency communications. The article we're featuring in this issue was suggested by Mark N7LYE and addresses disaster communication in the context of internet and cell phone services.

If you come across an article you think would be helpful to our readers, please let me know. -ed.

Self Evaluation Primer of Disaster Communications Using Internet and Cellular Telephone Services

By Major James R. Sohl, CAP, WB5MPX, rsohl@apex2000.net Copyright March 1996. Reprinted with permission from Major Sohl.

The basic text of this document was an Internet message written and sent by James R. "Ric" Sohl, in March 1997. It was written primarily for USAF Auxiliary - Civil Air Patrol and for Amateur (Ham) radio emergency service personnel, but it relates to any disaster relief agency.

The idea came during a Ham radio club meeting where the reliance of Cellular telephone service and the Internet during disaster events was discussed. A concern that government and private sector agencies that provide disaster support were beginning to rely on more on Cellular and Internet services, could create problems during actual disaster events.

This is because the main training and evaluation program for disaster relief training and planning is simulated disaster events. Most of these do not provide a realistic situation regarding a major event and the loss of a large percentage of public communications services.

This "Internet / Cellulartions Exercise" is designed as a self evaluation for any disaster relief agency. Be honest, you only hurt yourself and your agency, by not doing a true evaluation.

Even though the event is directed toward Civil Air Patrol and Amateur radio staff, if can be used by any agency or group.

It does assume some factors, that do not relate to the general public. Most disaster relief agencies have trained members, who are better prepared to deal with a disaster event. Therefore the following are assumed:

1. Each member has received training in disaster relief, including:
2. First Aid training,
3. Survival training at least to a basic level,
4. Expect to (and possibly have) travel to a disaster event and are prepared to,
5. Perform some duty to provide relief & support to the event at hand,
6. Understand, that disaster relief work is hazardous and dangerous.
7. Understand, that communications between the disaster area and surrounding areas is required,
8. and communications are required within the disaster area,
9. These communications provide a vital link to coordinate support and prevent loss of life,
10. that the efficiency and safety of ones staff is greatly improved with good reliable communications.
11. Are somewhat aware that a disaster can occur in your own home city and have,
12. Made prior plans to have a "Disaster Kit" readily available to provide for necessary,
13. Equipment and personal gear for a 72 hour (or longer) time period.

The scenario for this simulation, was based on my experience for more than thirty years in disaster/relief ground and air support missions. The training records are noted at the end of this document.

I know that some Civil Air Patrol (CAP) members, and amateurs are thinking that our radio networks are outdated, in particular our High Frequency long range networks. This is not limited to CAP and

Personal Profile

Each *QRV?* will feature one or two ACS members in a personal profile. Our first victim ... er subject, is our fearless leader, Mark Sheppard - N7LYE

Mark isn't sure when he was first licensed as a ham, perhaps 1962 or 1964 . At any rate, his novice call was KN7YFN and at that time there was a mandatory one year period to upgrade from a novice. During that year he successfully passed the general exam and became K7YFN.

An early fascination with electronics and radios led to Mark's first crystal set that he built at the age of seven. At about the time he entered junior high his electronic interests expanded into ham radio. At that time a lot of war surplus equipment was available and it was fun converting it for amateur use.

Mark's first real station was made up of a Globe Chief transmitter (cw only) that was limited to one crystal frequency at a time. The receiver was the general coverage Hallicrafters S-38E. Many contacts were made with a straight key and only 75 watts running to a dipole. Eventually the station was upgraded by a kit-built VFO, a second-hand Hammarlund HQ110, and a

Heath DX100. These additions allowed Mark to transmit voice and provided much improved frequency agility. During these years, he had a great time talking with other hams all over the world.

When Mark went to college his interests changed, ham radio was put on the shelf, and his license lapsed. Later, the desire to have communications as a safety precaution while backpacking, cross country skiing and sailing became a primary motivator for getting the ham ticket again. Mark was relicensed in 1987 as N7LYE.

Mark became involved with emergency preparedness and amateur radio through Gene Underwood, W7AKA. Gene was working with the Seattle EOC to recruit Hams to support the SDART, a community preparedness program focusing on neighbors helping neighbors. An invitation to attend a Queen Anne neighborhood meeting resulted in his becoming Queen Ann ARES AEC (a post now held by Pete Smith N7BYP).

At that time the entire Seattle program was going through changes of personnel and direction and really had no central leadership. Gene asked Mark to take on the leadership for the City and ARES Fire Zone 5. Mark accepted and began the process of learning what had to be done to get things organized.

He was fortunate in having a lot of good folks to call for help. Marina Zuetell, N7LSL

Medical Service EC was of great assistance in getting him started. Gene Underwood gave much support and leadership as well. Ron Kruml and Robert Snyder brought Stan Harter from California to discuss the ACS model and the unification of RACES and ARES.

The management of the Seattle EOC is very supportive of amateur radio and sees it as a viable resource to provide communications in times of emergency and disaster. A great partnership was formed between the City and the amateur community with the creation of the Seattle ACS. The EOC now is building an effective emergency communciations auxillary organization.

Mark enjoys many aspects of ham radio and, like many of us, doesn't have time to operate as much as he'd like. Even so, there's fun getting on HF and working a little DX on SSB. To keep in practice on CW, he tries to log one or two CW QSOs per month.

His current station consists of an ICOM 730 for HF, an Alinco HT for VHF, and Motorola equipment for UHF. His antenna farm includes a Cushcraft R5, A Butternut 80/40 meter vertical, a 2 meter collinear, and a dual band VHF/UHF groundplane.

Much time is spent working with ACS and with the leadership in the city's emergency communications. Mark finds this not only interesting, but also an opportunity to do something for his community.

In addition to ACS, MARK is a member of WWARA (the repeater coordinating body), the Apple Valley Radio Club and is co-owner of the Lake Wenatchee Repeater (145.49 MHz).

When not on the radio, Mark likes to sail, hike, camp and enjoy other outdoor activities with his two sons, ten year old Alexander and seven year old Nikolia. Both are very active and like the outdoors as does Mark's wife Sherry Taylor, N7WDH.

Mark works as the Director of Information Technology for Seattle Public Utilities.

One of his favorite Seattle spots, Amateur Radio Supply, is gone. Other non-radio favorites are Fisherman's terminal and Chinooks. In addition, the whole Sheppard family loves a tour of the goodies at REI.

Mark tries to take a walk in his neighborhood every evening to unwind and keep things in perspective.

Photo by Pete Smith
Mark at the mike.

SEA-Shake
continued from page 1

The four primary objectives of this exercise were: 1. Provide communications support to the Seattle Disaster and Response Teams (SDART), 2. Provide communications support to public agencies e.g. utilities, public safety and transportation, 3. Establish and test communication links with organizations outside our immediate area, and 4. Maintain communication coordination through the Seattle Emergency Operations Center (EOC) and to a limited extent test the communication aspects of the area command model.

Performance:

The exercise ran two hours and involved approximately 50 people, including amateur radio operators and emergency management staff at the Seattle, King County, and State EOCs. Radio operators were assigned to posts at 14 Community Centers, the North Police Precinct, Haller Lake, the three referenced EOCs. Other amateurs worked in a field capacity visiting sites through out the area to provide damage assessment.

The scenario imposed loss of amateur repeater assets due to power failure over the course of the exercise requiring the radio nets to fall back to the most simple of resources, simplex radio channels. The City was divided in two sectors for purpose of area command and radio asset management. The message traffic sent from the field communications posts was based on very detailed written scenarios that were custom prepared for each of the 14 assigned community centers. Subsequently, requests for resources were passed to the King County EOC and the State through various channels of communication. It was a good opportunity to test several amateur as well as government communication paths. These included CEMNet (Low Band VHF), Amateur HF, Amateur voice and packet.

What We Learned

On June 11, the ACS team along with Steve Marten of the Seattle EOC con-

ducted a de-briefing session to review what worked well and where we need improvement. The product of this evaluation was outlining an action plan to help

> "It was a good opportunity to test several amateur as well as government communication paths."

facilitate further development of our emergency communication capabilities.

The following are selected priorities from this action plan:

General

Develop and implement a training program for the ACS team to further develop skills in tactical communication techniques, basic emergency preparedness, basic incident command structure and operations, and first aid/CPR.

Deploy digital radio communications (packet radio). This approach is much more efficient, but requires members to upgrade equipment and learn new skills. Also the City needs to build a simple packet backbone structure.

Work in conjunction with the EOC to prototype area command communications structure.

Recruit additional amateur radio operators to cover posts in areas of the City presently not organized, e.g. central and south.

Recruit and train ACS members to staff City agency posts e.g. EOC, area command centers and department operating centers (e.g. Power Control, Charles Street, WOCC, Haller Lake, etc.).

Equipment and facilities improvements:

Improve ability to operate on more channels at EOC, e.g. more antennas.

More and better VHF radios, and more space for operations.

Install the remaining City ACS UHF repeater on Capital Hill.

Build/install ACS 54 MHz. Repeater.

Install radios and antennas at area command centers and later at operating centers.

Inter-connect one ACS UHF repeater to an ACS VHF simplex channel.

Communications, team building, and training improvements

Publish regular news letter.

Joint events with SDART.

Expand use of PAN EOC-ACS Page.

Develop on-line discussion group.

Set up a voice paging system with the to-be-decommissioned Fire System.

Special Thanks

We want to thank the nearly 50 Hams and emergency workers through out Western Washington who participated in this event. Also special thanks to Jim Mullen, Director and Steve Marten, Denise Croysdill and LuAn Johnson of the Seattle EOC for their support and continuing partnership.

Thanks and appreciation to Diane Newman and Gil Tumey KJ7DV and the Team from the King County EOC, Jim Sutton WA7PHD and the State EOC, Marina Zuetell N7LSL DEC Medical Services, Wade Blake N7LGK and Scott Cummins KC7LGE for handling net control at the EOC, Ralph Javins N7KGA for working as East Sector Field Net Control, Steve Monsey N0FPF for operating packet net control, Bruce Miller for photographs and Georg Smith and the communication technicians of the Seattle Communications shop for their many services and support in developing our technical capabilities.

Again thanks to everyone who participated and supported this event and helped make it a successful learning experience.

-- --- --

Primer
continued from page 2

CAP and amateur as many key staff people in many agencies / departments, feel the same way. Because of that, I have created the following:

Here is a little Internet / Cellular phone, communications exercise.

Your community has just been hit by a disaster. The following conditions now exist.

* No commercial power, will be available, for 72 hours, 60% of the power lines are down.

* 60% of all radio towers are out of service for 72 hours, at a 45 degree angle to your city from South to North. (Odessa watch out your trunking system just died, totally)

* Land line telephone service is lost to 60% of the community. (This occurred at Alpine, and occurs many weeknights between Midland and Odessa)

* Cellular telephone service is overloaded, and it takes two hours to get a line, and you may only use the service for 3 minutes. (This occurred at Alpine and occurs often in larger city's)

* All city and county radio networks are reduced by 80% (this figure is real for most trunking networks unless very well planned. I based this one on Odessa Tx. and the locations of their towers)

* 60% of the broadcast stations, radio and television) are off the air (see item 2.)

* The Cable TV system and satellite TV services are completely out of service. (see item 1.)

* All Internet service providers are out of service (see item 1, 3, and 4, this is not a joke.)

* 25 % of your fire department and police department, equipment is destroyed.

* No gasoline is available from any underground tanks, and the local government has taken over all overhead fuel storage tanks for government use. If you can show them that your use will support the recovery effort you may be able to get a small amount of fuel.

* You have planned ahead (right) and have an emergency gasoline powered generator to power your radio equipment, your generator uses .7 gallons per hour of operation, how much fuel do you have on hand (this may include your automobiles fuel tanks if you have a way to get the fuel out) you have _____ gallons of fuel, and can operate your generator for _____ hours. If you use your automobile to charge your batteries, remember the fuel consumption will be MUCH higher.

Do you have food for 72 hours for all members of you household? Note an MRE will feed two average people per meal.

> *"Is your community and are YOU prepared. Not just to survive but can you help your community or the community 40 miles away."*

(1200 Calories each, and they are a lot better than C and K rations)

* You do have five or ten gallons of drinking water don't you? In Odessa everyone has some bottled water, but what if tomorrow was your day to get fresh water?

* Do you have a way to keep warm during cold weather, bed rolls, blankets, fireplace (for cooking as well. You did plan for this right?)

* If we lost 60% of the radio towers we also lost a great deal of homes and many would require shelter. Can your community provide 60% of its population with emergency shelter. Your camping gear will come in handy now, if it did not get destroyed with the house.

A disaster noted above is a rare occasion, or is it, check out Arkansas right now and check out the state of Washington in the last two years. Much of what I described has occurred to many communities during the last two years.

Is your community and are YOU prepared. Not just to survive but can you help your community or the community 40 miles away. Do you have emergency radio's, both local (FM, 26.620) and HF, do you have spare/portable antennas, tools, food, water etc.

Civil Air Patrol and Amateur (ham) radio communications are a life saver, it may be the only communications available to contact the Outside world for Help and take over the load for the local networks.

When Alpine Texas was hit by an earthquake and a year or two later, by a severe storm, the land line and cellular telephone systems were totally useless (overloaded). CAP and Amateur radio became the primary communications link to the outside world for the first few hours. Most of Alpine people were not even aware that we were out of communications, or why.

Of note, most of the smaller areas feed by fiber optic cable, to Midland for all long distance service. One time I saw no long distance service available for two hours. You could not call outside of the Alpine area. Not Ft Davis nor Marfa, nor Ft Stockton. Every thing is switched through Midland.

Granted if need came up, the phone company should be able to rig up something in a few hours that should allow some communications outside the area. But how much communications can you provide with only a few lines available. Ten outside lines (if you're lucky) to the more than 3,000 local phones. You're going to have problems calling the hospital, much less someone outside the area.

During a disaster all communications circuits will become overloaded and additional networks must be put into service to provide the needed communications to help your community get support and aid from outside as well as provide additional communications capacity to fill in between hospitals, Emergency Operations Center, supporting local government communications needs (Radio Amateur Civil Emergency Service RACES) health and

welfare (Amateur Radio Emergency Service ARES), emergency shelters, disaster support agencies (Red Cross, Salvation Army) and providing local radio and television broadcast stations with emergency information for the public.

The communication requirements will vary and will be needed everywhere, as the event proceeds and outside support becomes available, the needs will change and may decrease.

All amateurs both local and from the surrounding areas will be needed to provide the mail communications support role. Local and long range networks will be required. After the initial support is put into place, the Ham radio networks will began to handle "health and welfare" messages with the outside world and between shelters, hospitals, etc.

All Civil Air Patrol units and members will be needed to provide many forms of emergency services, your local CAP network can provide additional communications to support local needs, as well as providing communications for your units non-communications disaster response / support.

Read this message, close your eyes, and imagine that it just occurred, your radio tower (if you have one, many CAP members only use a portable radio) came down, your home lost 40% of its roof. You can put up a 20 foot pole for an emergency antenna support.

* Do you have any emergency power?

* Do you have a 30 watt or higher power mobile unit installed in you automobile? If this unit was not used in the last 7 days, count it as out of service.

* Do you have 1 gallon (1/2 gallon during cold season) of drinking water per day per person for your home?

* Would you need to go to a store to purchase (they will all be out of everything in one hour) food, water, batteries, gasoline (none available) bed rolls, parts for replacement antenna's? If you answered yes to any part of item 4, you need to go to the store right now and get prepared.

* If you are using any portable radio (hand-held), this includes cell phones, that transmits, do you have an alkaline battery pack (with spare batteries?) If not count out your use of this radio after four hours of use. If the rechargeable battery was not charged in 72 hours count that battery pack as out of service. If you have not used that portable radio in the last 7 days, count it out of service.

* Do you have (yourself or in your unit) an HF radio, including portable antenna and emergency power source, that was operated in the last 7 days. If not your HF system can not be counted on when you need it. You do not have time to fix it

> *"You should use all of your radios at least once every week. Check into a local and HF net each week, and your station will work when the need arises."*

now. (This only applies to Amateur and CAP staff.)

I hope that I have made you think about what it can be like during a disaster situation. I have seen some units that only use their radios when on a mission and worst of all some units have no HF capability at all. (This only applies to Amateur and CAP staff.)

During the last three years I have called on local Texas CAP repeaters and stated "This is a simulated emergency radio communications test, I need a CAP station to answer my call to test your capability to provide emergency communications on this repeater. Is there any station available?" More than 50% of the time I have failed to receive an answer. What would happen if a CAP member was in an automobile accident, with a CAP radio who tried using your repeater? (This only applies to Amateur and CAP staff.)

During a disaster your repeater may fail, can your unit still provide support communications without the repeater? (EVERY BODY, do your radios have "talk around", if not, you're out)

Internet, E-Mail, facsimile, cellular and land line telephones have made our daily communications simple, easy and very handy to conduct our business, but during a disaster all of these services will be overloaded, or not useable. They can not be relied upon for a true disaster event. During a disaster some of these may work, and if they do, that will make things easier, but you can not depend on that until it happens.

The thing that scares me is that many local governments, disaster support agencies, and even CAP units and members are relying on non tactical communications and are not maintaining their local and long range radio communications capabilities or relationships with RACES, and ARES.

You should use all of your radios at least once every week. Check into a local and HF net each week, and your station will work when the need arises. Do not forget to pack up those emergency back up portable antenna (including coaxial cables, ropes, anchors, etc.) systems for each band.

If your unit does not have two (one should be yours) High Frequency radio systems, that can operate on 4 MHz and 7 MHz, with at least the capability to operate mobile, then, shame on you and your unit. You're not fully prepared. (This only applies to Amateur and CAP staff.)

I am open to any comments or ideas that you may wish to pass on. This document may be re-printed as long as the original source and author are noted. I would like notice of any publication that uses this material, but prior notification is not required unless you make changes in it. If you wish to change or edit it, please send your changes for approval by E-Mail. I have no problems with improvements as long as I have a copy for my records.

Net Control

with each operator had to listen to two or three radios at a time. With some of the anticipated expansion of the ACS area at the EOC, the noise problem should be alleviated.

Being a net control operator for a net, drill or real situation is not difficult and anyone interested should contact Mark Sheppard and volunteer. ▄▬▄▬▄

Emergency Communications on the Web

We'd like to include useful web addresses in *QRV?* Please send your favorite URL's (Web addresses) to the editor. Here's one for starters: http://home.att.net/~kb7jcp/

Ronald Kruml, KB7JCP, publishes EComm News, a very useful newsletter focusing on emergency communications. He describes it as: "... a monthly newsletter for emergency managers and emergency communication professionals. While focusing on topics of concern in the Pacific Northwest, EComm News contains valuable information for anyone involved in disaster operations."

▄▬▄▬▄

Primer

Written by

Maj. James "Ric" Sohl
USAF/AU-CAP Texas Wing Asst. DOK
Radio Calls: WB5MPX [HAM] TEXAS CAP [USAF/AU] AFA4ZV [USAF/MARS]
EMAIL: PRI: rsohl@apex2000.net SEC: sohl@juno.com
Maj. J R Sohl, CAP
2712 HALIFAX AVE.
ODESSA, TX 79762-8004
915-550-7959, Voice Mail and FAX.
915-556-1877 Cellular with Voice Mail

▄▬▄▬▄